

1 Claims

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3 1. A method of encoding video pictures comprising
4 the steps of:

5 dividing the picture into regions;

6 predicting whether each region requires
7 processing through further steps, said predicting
8 step comprising comparing one or more statistical
9 measures with one or more threshold values for
10 each region.

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12 2. A method as claimed in claim 1, wherein the
13 further steps include motion estimation.

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15 3. A method as claimed in claim 1 or claim 2,
16 wherein the further steps include transform
17 processing.

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19 4. A method as claimed in claim 3, wherein the
20 transform processing step is a discrete cosine
21 transform processing step.

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23 5. A method as claimed in any preceding claim,
24 wherein a region is a non-overlapping macroblock.

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26 6. A method as claimed in claim 5, wherein a
27 macroblock is a sixteen by sixteen matrix of
28 pixels.

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30 7. A method as claimed in any preceding claim,
31 wherein one of the statistical measures is
32 whether an estimate of the energy of some or all

1 pixel values of the macroblock is less than a
2 first predetermined threshold value.

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4 8. A method as claimed in claim 7, wherein the
5 estimate of energy is divided by a quantizer step
6 size before being compared to the first threshold
7 value.

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9 9. A method as claimed in any preceding claim,
10 wherein one of the statistical measures is
11 whether an estimate of the values of certain
12 discrete cosine transform coefficients for one or
13 more sub-blocks of the macroblock, is less than a
14 second predetermined threshold value.

15

16 10. A method as claimed in claim 9, wherein the
17 estimate of the values of certain discrete cosine
18 transform coefficients comprises:

19 dividing the sub-blocks into four equal sub-
20 regions;

21 calculating a sum of absolute differences of
22 residual pixel values for each sub-region of the
23 sub-block, where the residual pixel value is a
24 corresponding previously coded pixel luminance
25 value subtracted from a corresponding pixel
26 luminance value of the macroblock;

27 estimating the low frequency discrete cosine
28 transform coefficients for each region of the
29 sub-blocks, such that:

$$Y_{01} = \text{abs}(A + C - B - D)$$

30 $Y_{10} = \text{abs}(A + B - C - D)$

$$Y_{11} = \text{abs}(A + D - B - C)$$

1 where Y_{01} , Y_{10} and Y_{11} represent the estimations
2 of three low frequency discrete cosine transform
3 coefficients and A, B, C and D represent the sum
4 of absolute differences of each of the regions of
5 the sub-block where A is the top left hand
6 corner, B is the top right hand corner, C is the
7 bottom left hand corner and D is the bottom right
8 hand corner; and

9 selecting the maximum value of the estimate of
10 the discrete cosine transform coefficients from
11 all the estimates calculated.

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13 11. A method as claimed in claims 1 to 6, wherein
14 one of the statistical measures is whether an
15 estimate of the distortion due to skipping the
16 macroblock is less than a third predetermined
17 threshold value.

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19 12. A method as claimed in claim 11, wherein the
20 estimate of distortion is calculated by deriving
21 one or more statistical measures from some or all
22 pixel values of one or more previously coded
23 macroblocks with respect to the macroblock.

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25 13. A method as claimed in claim 11 or claim 12,
26 wherein, the estimate of distortion is calculated
27 by subtracting an estimate of the sum of absolute
28 differences of luminance values of a coded
29 macroblock with respect to a previously coded
30 macroblock (SAE_{noskip}) from the sum of absolute
31 differences of luminance values of a skipped

1 macroblock with respect to a previously coded
2 macroblock (SAE_{skip}).

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4 14. A method as claimed in claim 13, wherein
5 SAE_{noskip} is estimated by a constant value K.

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7 15. A method as claimed in claim 13, wherein
8 SAE_{noskip} is estimated by the sum of absolute
9 differences of luminance values of a previously
10 coded macroblock or if there is no previously
11 coded macroblock by a constant value K.

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13 16. A method of encoding pictures, as claimed in
14 claim 1, performed by a computer program embodied
15 on a computer usable medium.

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17 17. A method of encoding pictures, as claimed in
18 claim 1, performed by electronic circuitry.

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